Homework 2

1. Find the residues of the following functions at specified points

$$(a) \quad f(z) = \frac{e^z}{1 + z^2} \text{ at } z = \pm i$$

$$(b) \quad f(z) = \frac{z + z^{-1}}{(1 + z^2)^2} \text{ at } z = 0 \text{ and at } \pm i$$

$$(c) \quad f(z) = \frac{\csc(\pi z)}{z^2} \text{ at } z = 0$$

2. Chapter 24, numbers 1, 7, 11, 14, 17, 18, 21